

CLAIMS

What is claimed is:

1. A method to dynamically introduce a new attribute into a policy for a policy-managed system, without requiring a change to a policy manager, comprising:

operating at least one sensor coupled to the policy-managed system to dynamically discover a value of at least one existing metric;

associating a new attribute with the discovered value of the at least one existing metric;

incorporating the new attribute into a policy; and

storing the policy for future use.

2. A method as in claim 1, comprising determining if the new attribute is directly measurable by the at least one sensor, and if it is not, determining if a definition of the attribute currently exists and if it does, determining from the attribute definition the identity of at least one metric having a value required to determine the attribute value, obtaining the value of the at least one required metric from a corresponding one of the sensors, and determining the value of the attribute from the obtained at least one metric value.

3. A method as in claim 2, where the attribute definition is entered by a user via a user interface.
4. A method as in claim 2, where the attribute definition comprises a formula specified by a user.
5. A method as in claim 2, where the attribute definition comprises a method that determines the value of the new attribute from existing information.
6. A method as in claim 1, where the new attribute is a directly discoverable entity.
7. A method as in claim 1, where the new attribute is not a directly discoverable entity.
8. A policy management system, comprising:

a user interface; and

a policy manager coupled to the user interface via a policy repository for introducing a new attribute, using said user interface, into a policy for a policy-managed system, without requiring a change to the policy manager.
9. A policy management system as in claim 8, further comprising at least one sensor coupled to the policy-managed system to dynamically discover a value of at least one existing metric, said at least one sensor having an output coupled to at least said user interface and to said policy manager, further comprising a user interface manager that is responsive to a user input and to said output of

said sensor for associating a new attribute with the discovered value of the at least one existing metric, for incorporating the new attribute into the policy, and storing the policy into the policy repository.

10. A policy management system as in claim 9, where said policy manager operates in conjunction with said at least one sensor and an attribute processor to determine if the new attribute is directly measurable by the at least one sensor, and if it is not, to determine if a definition of the attribute currently exists and if it does, to determine from the attribute definition the identity of at least one metric having a value required to determine the attribute value, to obtain the value of the at least one required metric from a corresponding one of the sensors, and to determine the value of the attribute from the obtained at least one metric value.

11. A policy management system as in claim 10, where the attribute definition is entered via said user interface.

12. A policy management system as in claim 10, where the attribute definition comprises a formula entered via said user interface.

13. A policy management system as in claim 10, where the attribute definition comprises a method that determines the value of the new attribute from existing information.

14. A policy management system as in claim 8, where the new attribute is a directly discoverable entity.

15. A policy management system as in claim 8, where the new attribute is not a directly discoverable entity.

16. A policy management system as in claim 8, further comprising at least one effector for use in carrying out the results of an evaluation of the policy on the policy-managed system.

17. A policy management system as in claim 16, where the policy-managed system comprises a data storage system, and where the at least one effector is used for modifying data storage allocation.

18. A computer program embodied on a computer readable medium that is executed by at least one data processor of a policy management system, comprising:

first computer program instructions for implementing a user interface; and

second computer program instructions for implementing a policy manager that is coupled to the user interface via a policy repository for introducing a new attribute, using said first computer program instructions, into a policy for a policy-managed system, without requiring a change to the second computer program instructions.

19. A computer program as in claim 18, further comprising at least one sensor coupled to the policy-managed system to dynamically discover a value of at least one existing metric, said at least one sensor having an output coupled to at least said user interface and to said policy manager, where said first computer program instructions further implement a user interface manager that is responsive

to a user input and to said output of said sensor for associating a new attribute with the discovered value of the at least one existing metric, for incorporating the new attribute into the policy, and storing the policy into the policy repository.

20. A computer program as in claim 19, where said policy manager operates in conjunction with said at least one sensor and an attribute processor to determine if the new attribute is directly measurable by the at least one sensor, and if it is not, to determine if a definition of the attribute currently exists and if it does, to determine from the attribute definition the identity of at least one metric having a value required to determine the attribute value, to obtain the value of the at least one required metric from a corresponding one of the sensors, and to determine the value of the attribute from the obtained at least one metric value.

21. A computer program as in claim 20, where the attribute definition is entered via said user interface.

22. A computer program as in claim 20, where the attribute definition comprises a formula entered via said user interface.

23. A computer program as in claim 20, where the attribute definition comprises a method that determines the value of the new attribute from existing information.

24. A computer program as in claim 18, where the new attribute is a directly discoverable entity.

25. A computer program as in claim 18, where the new attribute is not a directly discoverable entity.

26. A computer program as in claim 18, further comprising at least one effector for use in carrying out the results of an evaluation of the policy on the policy-managed system.

27. A computer program as in claim 26, where the policy-managed system comprises a data storage system, and where the at least one effector is used for modifying data storage allocation.

28. A computer program as in claim 18, where the new attribute comprises one of a discoverable attribute having one of a dynamic or a static value determined in accordance with some function from at least one sensor-obtained metric, and a non-discoverable attribute that does not correspond to a discoverable item, but is instead set during policy evaluation.

29. A computer program as in claim 18, where the new attribute is introduced by a direct mapping to an available metric, or is introduced as a derived attribute by mapping a user-defined function to at least one available metric.

30. A computer program as in claim 29, where the mapping is performed by a user via the first computer program instructions.

31. A computer program as in claim 29, where the mapping is performed by a user-defined attribute-processing class of the second computer program instructions that takes as input discoverable attributes, and that outputs the derived attribute.

32 A computer program as in claim 29, where the attribute is represented as an Attribute Bean, and is defined by a user via a user interface.